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EXAMINER

CHAMBERS, TANGELA T

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/561,194
Filing Date: December 16, 2005
Appellant(s): NG ET AL.

James E. Ledbetter
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 10, 2009 appealing from the Office action mailed July 21, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,535,493	Lee et al	3-2003
2004/0122976	Dutta et al	6-2004

2003/0016655	Gwon	1-2003
2002/0194385	Linder et al	12-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (Lee) (US Patent No. 6,535,493 B1) in view of Dutta et al (Dutta) (US Patent Publication No. 2004/0122976 A1).

As per claim 1, Lee discloses:

- ***A mobile terminal apparatus comprising:*** (Lee, Abstract).
- ***a plurality of interfaces, each interface being capable of, when an associated access mechanism thereof is in an active state, obtaining a connection to a network using one of a home-address and a care-of-address,***

(Lee, Column 8, Line 54 - Column 9, Line 45), Lee teaches connecting to the network using one of a home-address and a care-of-address.

- ***said home-address being assigned to said interface in advance***, (Lee, Column 3, Lines 43-55, “The mobile unit may freely roam about even though it is assigned to a unique, fixed Internet address tied to a fixed location.”).
- ***said care-of-address being assigned to said interface while said interface is in a domain where the home-address is not available***; (Lee, Column 6, Lines 35-49, “When away from home, the mobile unit 130 obtains a care-of address such as the IP address of its foreign agent, and uses its foreign agent to register this address with its home agent so that datagrams destined for the mobile unit 130 are forwarded to the foreign agent and then to the mobile unit 130 using the tunneling process.”).
- ***a setup section that sets up the binding***. (Lee, FIG. 6, Column 10, Lines 53-65 and FIG. 7, Column 11, Lines 48-61.).

Lee does not specifically disclose the following limitations. However, Dutta in an analogous art teaches the following:

- ***an instructing section that instructs a setup of a binding of a home-address of a first interface of said plurality of interfaces and one of a home-address and a care-of-address of a second interface of said plurality of interfaces, said first interface losing a connection obtained through a care-of-address of said first interface***; (Dutta, Fig. 2B and Page 5, Paragraph [0037] – Page 6, Paragraph [0042], “When the crossover node 214a receives the message, it updates its routing cache

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entry for the care-of-address, replacing the original downlink interface 228 with the new interface 226 pointing towards base station 216a.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Dutta into the apparatus of Lee to setup a binding of a home-address of a first interface to one of a home-address and a care-of-address of a second interface when said first interface connection is lost. The modification would be obvious because one of ordinary skill in the art would want the advantage of allowing for integrated mobility management addressing both intra-domain and inter-domain mobility for both real-time and none-real time applications. (Dutta, Page 2, Paragraph [0011]).

Claim 6 is the method claim corresponding to the apparatus claim 1 and is rejected under the same reasons as set forth in connection of the rejection of claim 1; and further Dutta discloses:

- ***A handoff method.*** (Dutta, Page 5, Paragraph [0036]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Dutta into the method of Lee to include a handoff method. The modification would be obvious because one of ordinary skill in the art would want the advantage of allowing for integrated mobility management

addressing both intra-domain and inter-domain mobility for both real-time and none-real time applications. (Dutta, Page 2, Paragraph [0011]).

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (Lee) (US Patent No. 6,535,493 B1) in view of Dutta et al (Dutta) (US Patent Publication No. 2004/0122976 A1) and in further view of Gwon (US Patent Publication No. 2003/0016655 A1).

As per claim 2, the rejection of claim 1 is incorporated and further Lee discloses:

- ***a deciding section that decides whether or not the selected second interface is present in a domain where the home-address of said second interface is available;*** (Lee, FIG. 6, Column 10, Lines 35-65, "Upon receipt of the registration request, the process of FIG. 6 proceeds to step 374 where the AP checks whether or not it is acting as a foreign agent."... "Alternatively, in the event that the AP is not acting as a foreign agent, the process of FIG. 6 checks whether or not the AP is acting in the capacity of a home agent in step 378.").
- ***a determining section that determines the home-address of said second interface is bound to the home-address of said first interface when said second interface is present in the domain where the home-address of said second interface is available, and that determines the care-of-address of said second interface is bound to the home-address of said first interface when said second interface is not present in the domain where the home-address of said second***

interface is available, based on a result of the decision by said deciding section.

(Lee, Column 9, Lines 57-65 and FIG. 7, Column 11, Lines 48-61).

Neither Lee nor Dutta specifically disclose:

- ***a detecting section that detects the loss of the connection obtained through the care-of-address of said first interface;*** However, Gwon in an analogous art discloses the above limitation. (Gwon, Page 5, Paragraphs [0047]-[0048]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Gwon into the apparatus of Lee and Dutta to detect the loss of the connection. The modification would be obvious because one of ordinary skill in the art would want to a way to determine when wireless communication with the router has failed. (Gwon, Page 5, Paragraph [0047]).

- ***a searching section that, when the loss of the connection of said first interface is detected, searches for at least one interface whose associated access mechanism is in an active state from among said plurality of interfaces;*** (Gwon, Page 5, Paragraph [0049], "As mobile node (MN) 135 reaches intermediary location B and continues toward location C, in order to maintain communication with the network it must identify a new local router [.]"), Identifying a new local router is taught by Gwon as a way to search for a new interface.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Gwon into the apparatus of Lee and Dutta to search for a new connection. The modification would be obvious because one of ordinary skill in the art would want to maintain communication with the network by identifying a new network link. (Gwon, Page 5, Paragraph [0049]).

- ***a selecting section that selects, based on a predetermined criterion, said second interface from among said at least one interface that has been searched;***

(Gwon, Page 5, Paragraph [0049], "As mobile node (MN) 135 reaches intermediary location B and continues toward location C, in order to maintain communication with the network it must identify a new local router and establish a new network link to replace the link with local router R1.") Establishing a new network link, as taught by Gwon, is equivalent to selecting the new interface.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Gwon into the apparatus of Lee and Dutta to select a new connection that has been searched. The modification would be obvious because one of ordinary skill in the art would want to maintain communication with the network by establishing a new network link before the existing connection is lost. (Gwon, Page 5, Paragraphs [0048]-[0049]).

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As per claim 3, the rejection of claim 1 is incorporated, and claim 3 is rejected under the same reasons set forth in connection of the rejection of claim 2. Gwon further discloses:

- ***each of said plurality of interfaces predicts a loss of a connection obtained through an assigned care-of-address;*** (Gwon, Page 6, Paragraph [0059] – Page 7, Paragraph [0061], “A mobile node 135 captures the Layer 3 beacons and periodically carries out a mobility prediction analysis 710 to determine when it is imminent that the mobile node 135 in communication with a correspondent node 140 must hand-off its network communications link from a current foreign agent (FA) 145 to another foreign agent as it moves from a location A to a location B in the network.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Gwon into the apparatus of Lee and Dutta to predict a loss of connection. The modification would be obvious because one of ordinary skill in the art would want to reduce packet latency, packet loss and packet jitter by pre-establishing a new route before hand-off occurs. (Gwon, Page 3, Paragraph [0027]).

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (Lee) (US Patent No. 6,535,493 B1) in view of Dutta et al (Dutta) (US Patent Publication No. 2004/0122976 A1) in view of Gwon (US Patent Publication No. 2003/0016655 A1)

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and in further view of Linder et al (Linder) (US Patent Publication No. 2002/0194385 A1).

As per claim 4, the rejection of claim 1 is incorporated, and claim 4 is rejected under the same reasons set forth in connection of the rejection of claim 2. However, neither Lee, Dutta nor Gwon specifically disclose:

- ***a searching section that, when the loss of the connection of said first interface is detected, searches for at least one interface associated with an access mechanism of a different type from an access mechanism associated with said first interface from among said plurality of interfaces;*** However, Linder in an analogous art discloses the above limitation. (Linder, Abstract and Page 3, Paragraph [0011], "In particular, through the constant monitoring of the physical network interfaces and their features, changes can be made automatically, for instance, when physical network interfaces are available with better transmission options than the one momentarily active").

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Linder into the apparatus of Lee, Dutta and Gwon to search for an interface with an access mechanism of a different type from the one associated with the first interface. The modification would be obvious because one of ordinary skill in the art would want to allow the mobile node to move to

various locations with the ability to access heterogeneous networks using different interfaces. (Linder, Pages 3-4, Paragraph [0025]).

- ***an activating section that activates an access mechanism associated with said selected second interface;*** (Linder, Abstract and Pages 5-6, Paragraph [0028], “The IPsec module 132 thereby updates the IPsec data tunnel configuration according to the current network connection, after which the mobile IP module 131 registers the new care-of address with the home agent so that the routing of the data packets to the new location of the mobile host takes place, and updates the IP configuration if necessary at the home agent according to the momentary physical network interface.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Linder into the apparatus of Lee, Dutta and Gwon to activate an access mechanism of the selected interface. The modification would be obvious because one of ordinary skill in the art would want to change and update the access mechanism without interruption to the mobile’s communication. (Linder, Page 1, Paragraph [0003]).

As per claim 5, the rejection of claim 1 is incorporated, and claim 5 is rejected under the same reasons set forth in connection of the rejections of claims 2-4.

(10) Response to Argument

Summary of Technology

In mobile communication systems a mobile terminal must set up a connection with a system infrastructure in order to send and receive data. Currently, such a connection is called binding, which is the association of the mobile terminal with a home address (the address of the mobile terminal's home agent) or the association of the mobile terminal with a home address and a care-of-address (the address of the mobile terminal's foreign agent). A routing (binding) table is used to store the mobile terminal's associated address(es) in order for data to be properly routed to the mobile terminal whether it is at its home location or at a foreign location. When the mobile terminal moves (roams) to a location that requires a new address to maintain network connectivity, the binding of the mobile terminal must be updated. To update its binding, the mobile terminal sends a registration request message to its home agent with its new address, and once the request has been accepted, the binding of the mobile terminal is updated and the mobile terminal is able to send and receive data at its new location.

Summary of Appellant Argument and Examiner's Response

In general the appellant first argues that the references are not combinable and that there is no suggestion to combine the references.

However, the examiner respectfully disagrees.). In instant case, the references used in this case were references concerned with the same technology of mobile systems with moving terminals changing attachments to the network thus binding to different points within the network. The binding indicating by changes in addresses

thus interfaces identifiers. Also the suggestion to combine the references was taught within the secondary references as cited in the motivation statements of the final rejection and can also be found within the background of the secondary references.

Further the examiner must point out that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Further, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Thus with regard to motivation and combination the examiner contends that the references were combinable with proper motivation and the rejection should stand.

Secondly the appellant argues that the prior art references do not teach binding of a mobile terminal home address of a first interface, which loses connectivity, with an address of a second interface.

However, the examiner respectfully disagrees. Lee et al discloses a mobile terminal capable of a plurality of interfaces with a pre-existing home address. As the

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mobile terminal moves from place to place, it obtains new home and care-of-addresses depending on the location of the mobile terminal. When the mobile terminal detects it has moved to a location that requires a new address in order to maintain network connectivity, the mobile terminal sends a registration request to its home agent which contains the mobile terminal's new address. Upon accepting the registration request, the home agent updates its binding table with the new address of the mobile terminal. Data addressed to the mobile terminal received at the home address is forwarded to the mobile terminal's new address as indicated in the binding table. Thus Lee et al discloses binding of a mobile terminal's home address of a first interface to a second address of a second interface. Dutta et al discloses a mobile terminal performing a handoff (losing connection with a first interface and establishing a connection with a second interface in order to maintain network connectivity) and sending a registration (binding) message to the network in order to update its care-of-address. An original entry (home address) exists in a routing cache (binding table) for the mobile terminal and a second entry is added to the binding table for the mobile terminal's new care-of-address. Therefore, data received for the mobile terminal at its original address is not lost due to handoff as the mobile terminal is still able to receive data from its original address. In addition, the mobile terminal is able to receive data from its new care-of-address as well. Thus, by combining the teachings of Lee et al and Dutta et al, binding of a mobile terminal home address of a first interface, which loses connectivity, with an address of a second interface is taught.

Therefore, the examiner contends that the limitations are taught and the rejections should stand.

Detailed Response to Argument

On pages 4-5, the appellant presents law for establishing a *prima facie* case of obviousness for combining prior art references. The Examiner's Response provided above establishes that the prior art relied upon for the rejections is combinable and that there is suggestion to combine said references, and therefore, the examiner contends a *prima facie* case of obviousness has been established.

On page 6, the appellant argues that the prior art of record does not disclose a mobile terminal that binds a home address of a first interface, which loses network connectivity, and one of a home address and a care-of-address of a second network interface. The examiner respectfully disagrees. Lee et al discloses that a home agent, upon accepting a registration request, updates its binding of the mobile terminal such that data addressed to the mobile terminal is received at the home agent (home address) and forwarded to the foreign agent (care-of-address). Therefore, Lee et al discloses binding a home address of a first interface with a care-of-address of a second interface. Dutta et al discloses that in order to prevent data addressed to the mobile terminal from being lost during handoff (the loss of a first interface while establishing a connection to a second interface), semi-soft handoff may be used. When an update (registration) message is received, Dutta et al discloses an entry is added in the routing cache (binding table) for the mobile terminal's new care-of-address in addition to the entry that already exists in the binding table for the mobile terminal's original (home)

address. By using semi-soft handoff, the binding table contains an entry for the mobile terminal's first interface (home address) and for its new interface (care-of-address). The mobile terminal is capable of continuing to communicate with the network without any loss of data due to handoff. Therefore, Dutta et al discloses binding a home address of a first interface, which loses network connectivity with a care-of-address of a second interface. In modifying, Lee et al with Dutta et al, the appellant's claimed features were obvious in the art at the time the appellant's invention was made. For these reasons in addition to the Examiner's Response provided above, the examiner contends the claimed feature is taught.

On page 6, the appellant argues that the intermediate node disclosed by Dutta et al is not the same as the claimed subject matter of a mobile terminal. The intermediate node taught by Dutta et al receives the update (registration) message transmitted by the mobile terminal and adds the new care-of-address of the mobile terminal to its routing cache (binding table). Therefore, the examiner is not stating that the intermediate node is a mobile terminal. The intermediate node aids in handoff of a mobile terminal from a home agent to a foreign agent by assuring that the mobile terminal's new care-of-address is entered into the binding table, enabling the mobile terminal to receive data addressed to it without loss.

On page 6, the appellant argues there is no motivation for combining the prior art references of Lee et al and Dutta et al. The examiner respectfully disagrees. The prior art relied upon by the examiner is analogous and within the same field of endeavor,

integrated mobility management. For these reasons in addition to the Examiner's Response provided above, the examiner contends the references are combinable.

On page 7, the appellant argues that the system taught by Lee et al has integrated mobility management addressing both intra-domain and inter-domain mobility and one of ordinary skill in the art would not be motivated to modify this system with the system taught by Dutta et al to achieve a capability it already possesses. The examiner respectfully disagrees. The examiner contends that since the prior art of Lee et al and Dutta et al are in the same field of endeavor and possess similar capabilities, one of ordinary skill in the art would find motivation to combine the references in order to overcome disadvantages of prior art systems recited in the background section of Dutta et al, to allow for handoff to occur without data being lost and to improve mobility management by allowing for both real-time and non-real time applications. For these reasons in addition to the Examiner's Response provided above, the examiner contends motivation exists to combine the references.

On page 7, the appellant argues that replacing an original interface with a new interface is not the same as binding a home address of a first interface with an address of a second interface. Lee et al discloses a home agent receiving a registration request from a mobile terminal and upon accepting the registration request, the home agent updates its binding of the mobile terminal such that data addressed to the mobile terminal is received at the home agent and forwarded to a foreign agent. Therefore, Lee et al discloses binding a home address of a first interface with a care-of-address of a second interface. Although Dutta et al does disclose replacing an original interface

with a new interface, Dutta et al further discloses using semi-soft handoff, in which a routing cache (binding table) contains an entry for the mobile terminal's first interface (home address) and for its new interface (care-of-address). In using semi-soft handoff, the original interface is not replaced. Therefore, Dutta et al also discloses binding a home address of a first interface with a care-of-address of a second interface. For these reasons in addition to the Examiner's Response provided above, the examiner contends the claimed feature is taught.

On page 7, the appellant argues that the prior art of record does not support the ability of a mobile station to maintain communication with a network by temporarily borrowing a second network interface address when communication through the address of a first network interface is disrupted. The examiner respectfully disagrees. Dutta et al discloses that when a mobile terminal performs semi-soft handoff, an entry is added to a routing cache (binding table) for the mobile terminal's new care-of-address in addition to an entry that exists in the table for the mobile terminal's first interface (home address). Therefore, Dutta et al discloses a mobile terminal maintaining communication with a network and obtaining a second interface address when the first interface is disrupted. For these reasons in addition to the Examiner's Response provided above, the examiner contends the claimed feature is taught.

On page 8, the appellant presents a summary of appellant's arguments. The examiner has responded to all arguments previously presented.

On page 8, the appellant argues the rejections of dependent claims 2-5 as being allowable as they incorporate the features presented within the independent claims.

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The examiner respectfully disagrees. The examiner contends the prior art of record discloses the limitations of the independent claims 1 and 6, and therefore, the dependent claims are not in a condition for allowance. The examiner believes the references to dependent claims 15, 16, 19, 20, 22, 23 and 38 to be typographical errors as there are only nine claims presented to the office for examination.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Tangela T. Chambers/

May 9, 2009

Conferees:

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617

Nick Corsaro

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